

SITE INSPECTION WORK PLAN
for
ST. LOUIS PARK SOLVENT PLUME SITE
ST. LOUIS PARK, HENNEPIN COUNTY, MINNESOTA

MPCA Site Assessment Site: SA4542
MPCA Superfund Site ID: SR377 and SR358
EPA ID: MNN000510267

Prepared by:

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October 26, 2015



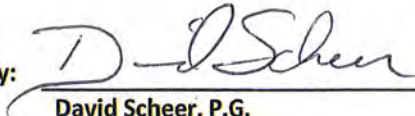
Minnesota Pollution
Control Agency

Signature Page
For

**SITE INSPECTION WORK PLAN
ST. LOUIS PARK SOLVENT PLUME SITE**

Highway 7 and Wooddale Avenue
St. Louis Park, Hennepin County, Minnesota
MPCA Site Assessment Site: SA4542
MPCA Superfund Site ID: SR377 and SR358
EPA Site ID: MNN000510267

Prepared by:



Date:

1/25/2016

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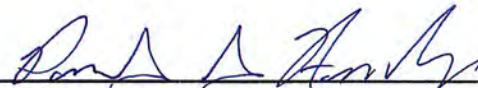


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**SITE INSPECTION WORK PLAN
ST. LOUIS PARK SOLVENT PLUME SITE
MPCA Site Assessment Site SA4543/State Superfund Site SR377
EPA SEMS ID MNN000510267**

1.0 STATEMENT OF PURPOSE

The Minnesota Pollution Control Agency (MPCA) Remediation Division has prepared this Site Inspection Work Plan for the United States Environmental Protection Agency (U.S. EPA) Region V to outline the scope of work to conduct a Site Inspection (SI) of the St. Louis Park Solvent Plume site located in the cities of St. Louis Park and Edina, Hennepin County, Minnesota. The St. Louis Park municipal well field consists of ten bedrock wells that provide potable water for a population of approximately 47,500. Two of the St. Louis Park municipal wells, SLP4 and SLP6, are impacted by vinyl chloride (VC) at concentrations above the federal regulatory standard. Trichloroethene (TCE) concentrations in samples from SLP6 also exceed the federal regulatory standard; however, well SLP6 is not being pumped. The Edina municipal well field consists of eighteen bedrock wells that provide potable water for a population of approximately 48,000. Two of the Edina municipal wells, E2 and E7, are impacted by VC at concentrations above the federal regulatory standard. *cis*-1,2-Dichloroethene (*cis*DCE) concentrations exceed the state regulatory standard in samples from Edina wells E2 and E7 and St. Louis Park Wells SLP4 and SLP6. TCE concentrations in well SLP6 also exceed the state regulatory standard.

Activities to be conducted by the MPCA during the SI include a) collecting raw groundwater samples from each of the four Prairie du Chien-Jordan (PDCJ) municipal wells, SLP4, SLP6, E2, and E7, b) collecting background groundwater samples from the nearby PDCJ municipal wells SLP5, E15 and PDCJ monitoring well W403, c) collecting groundwater samples from St. Peter Aquifer monitoring well W133, d) collecting groundwater samples from Platteville-Glenwood (PVGW) formation monitoring wells W120, W143, W433, W434, W437 and W438, e) collecting background PVGW groundwater samples from monitoring wells W27, W425 and W426 f) collecting Quaternary Aquifer groundwater samples from monitoring wells P307, P309 and P310 g) collecting background Quaternary Aquifer groundwater samples from monitoring wells W423 and W425 h) summarizing the hydrogeology and groundwater and soil sampling results from the nearby St. Louis Park Solvent Plume (SLPSP) and Edina Well Field (EWF) State Superfund sites, which are a nearby possible source for the St. Louis Park-Edina municipal well contamination. All samples collected by the MPCA will be analyzed for VOCs using the U.S. EPA Contract

Laboratory Program (CLP) method for trace VOA (Volatile Organics Analysis). Historic sampling results from the SLPSP and EWF sites that will be presented have been collected by the MPCA, but were not collected using the EPA CLP.

Data collected and presented by the MPCA in the SI will be used to determine whether the Site is eligible for the National Priorities List (NPL) by documenting observed releases, observed nearby potential contaminant sources and human and environmental receptors.

2.0 SITE DESCRIPTION

The St. Louis Park Solvent Plume Site includes the area affecting municipal drinking water systems operated and owned by the cities of St. Louis Park and Edina located in central Hennepin County.

The St. Louis Park municipal well field is comprised of two impacted bedrock wells:

- SLP4 open hole in the PDCJ aquifer
- SLP6 open hole in the PDCJ aquifer

The Edina municipal well field is comprised of four impacted bedrock wells:

- E2 open hole in the PDCJ aquifer
- E7 open hole in the PDCJ aquifer
- E13 open hole in the Jordan aquifer
- E15 open hole in the PDCJ aquifer

In samples collected from St. Louis Park (SLP) Treatment Plant 4, concentrations of VC have consistently exceeded the state health risk limit (HRL) since 2004 and the MCL 10 times since 2007. cDCE concentrations have also exceeded the state health based value (HBV) in samples collected from 2009 to present, and TCE concentrations have also exceeded the HBV seven times since 2009 (MDH Data received 8/12/15, Appendix A). VC and TCE concentrations have exceeded the MCL, and cDCE concentrations have exceeded the HBV in samples collected from municipal supply well SLP 6 since 2004 (AECOM 2013A). However, SLP6 is designated a backup well for times of peak demand in the St. Louis Park municipal system.

VC concentrations exceeded the MCL in multiple samples collected from Edina municipal well E7 in 2004. Due to the elevated VC concentrations, well E7 was shut down until a treatment system could be constructed. VC, was also detected in samples collected from Edina municipal wells E2, E13 and E15; The Edina water treatment system with air stripping technology came on line September 2012 and treats water for E2, E7 and E15.

The location of the St. Louis Park Solvent Plume, which consists of the St. Louis Park Solvent Plume and Edina Well Field State Superfund sites, is shown on Figure 1. Several well field Drinking Water Supply Management Areas (DWSMAs) and Well Head Protection Areas (WHPAs) are located in the St. Louis Park Solvent Plume. The DWSMAs and WHPAs are discussed further in the Preliminary Assessment submitted to the EPA on August 27, 2015 and are available on the MDH website (MDH, 2013).

The source of the municipal well contamination in the PDCJ aquifers is currently undetermined. Possible sources of the contamination include: the former Super Radiator Coils (SR1376), the former Super Radiator Coils Tube Fab Division (SR377), the former Eclipse Electric (SR377), the former EPS Printing (SR377), and the Care Cleaners (SR377) properties located nearby Highway 7 and Wooddale Avenue, north of the St. Louis Park and Edina well-fields.

General Information and Personnel	
Site Name: St. Louis Park Solvent Plume	Site Address/Location: Highway 7 and Wooddale Avenue, St. Louis Park, MN
MPCA Site Assessment ID: SA4542	County: Hennepin
MPCA State Superfund ID: SR377 and SR358	U.S. EPA ID: MNN0005102167
Directions to Site: <u>From Minneapolis</u> Take I-94 West to I-394 W Continue onto I-394 W to MN Highway 100 Travel south on Highway 100 for 1.9 miles to MN Highway 7 Travel west on Highway 7 for 0.5 miles to Wooddale Avenue Turn right onto Wooddale Avenue	
Latitude: 44.939341	Longitude: -93.356816
USGS 7.5 Minute Series Quadrangle: Minneapolis South	
PLS: Township 117 N Range 21 W Section 16	
Access Permitted By: Jay Hall, St. Louis Park Utilities Superintendent Dave Goergen, Edina Public Works Coordinator Office: 952-924-2557 Office: 952-826-0312 Mobile: 952-242-7648 Mobile: 952-292-6225 Email: jhall@stlouispark.org Email: dgoergen@EdinaMN.gov Mark P. Hanson, P.E. St. Louis Park Public Works Superintendent Office: (952) 924-2186 Email: MHANSON@stlouispark.org	

3.0 SITE HISTORY AND PREVIOUS SITE WORK

Environmental investigation work was initiated in 2004, when vinyl chloride was detected in the city of Edina municipal well number 7 (E7) at a concentration exceeding the federal maximum contaminant level (MCL). The detection triggered a multi-phase investigation to identify the source of groundwater contamination, as well as identify contaminant fate and transport mechanisms. The Edina municipal wells were listed on the state Permanent List of Priorities (PLP) in July 2006 as site ID SR358.

Investigations conducted by the MPCA between 2004 and 2013 (STS, 2004; STS, 2005b; STS, 2006; STS/AECM, 2007; AECOM, 2008; AECOM, 2009; AECOM, 2010; AECOM, 2013) documented the presence of a large chlorinated volatile organic compound (VOC) plume spreading toward the southeast and descending from the shallow drift aquifer downward through the Platteville (OPVL) and St. Peter (OSTP) aquifers down into the Prairie du Chien-Jordan (OPCJ) aquifer. It appears that the main source area for the chlorinated VOCs was centered on an area within the city of St. Louis Park, most notably in an area near the intersection of Highway 7 and Louisiana Avenue. This conclusion was supported by water data indicating that during the spring, summer, and fall months, heavy pumping from the Edina municipal wells creates a hydraulic gradient causing contaminated groundwater in the OPCJ aquifer to migrate from St. Louis Park toward the Edina wells. The OPCJ aquifer serves as the primary water supply aquifer in the area.

Multiple supply wells were identified with historic chlorinated VOC concentrations exceeding regulatory criteria (Minnesota health risk limits/health based values [HRLs/HBVs] and/or federal maximum contaminant levels [MCLs]) during this timeframe. These included: St. Louis Park municipal wells (SLP4, and SLP6), Edina municipal wells (E2, E7, E13, and E15), and non-municipal water supply wells (W23-Reilly pump out well, W29-industrial well, W48-abandoned, W105-Reilly pump out well, and W119-irrigation well). It should be noted that St. Louis Park well SLP6 is currently not used as a principal municipal supply well; however, it is connected as a backup supply well for times of peak demand.

Until late 2006, environmental sampling efforts focused exclusively on testing groundwater. However, the presence of a high concentration VOC plume in the drift aquifer, extending through the St. Louis Park residential areas, raised a concern of exposure to VOCs through the vapor intrusion pathway (STS, 2007A). A soil vapor survey was completed in 2007 to collect soil vapor data (STS, 2007B). Results of the survey identified soil vapor contamination within the area, with the highest shallow vapor

concentrations noted in a residential area near Colorado Avenue South and Oxford Street. MPCA staff determined additional testing was warranted, and St. Louis Park city staff were notified.

The MPCA requested assistance from the U.S. Environmental Protection Agency (EPA) Emergency Response Program due to the size, complexity, and expense of the additional study needed to evaluate soil vapor intrusion. A plan was developed by both agencies, and testing began in early 2008. EPA took steps necessary to protect the health and safety of residences who had given access, including the installation of sub-slab depressurization systems in approximately 40 homes. EPA Removal Program involvement concluded in June 2008. The investigation areas are illustrated on Figure 1.

Additional source area characterization (including the collection of soil and groundwater samples and conducting passive soil vapor surveys) was completed between 2009 and 2013 to further characterize the suspected source area. These investigations (AECOM, 2009; AECOM, 2012; AECOM, 2013B) identified five potential sources of VOC contamination that the MPCA has identified as the suspected sources. These include: former Super Radiator Coils/current Tall Sales (6714 Walker Street), Super Radiator Coil Tube Fab Division (3356 Gorham Avenue), Eclipse Electric (6512 Walker Street), Former EPS Printing (6518 Walker Street) and Care Cleaners (6528 W Lake Street). The St. Louis Park solvent plume was added to the state PLP in April 2010 as MPCA State Superfund Site ID SR377.

The historic data demonstrates the presence of hazardous substances released to the environment. The MPCA is continuing to perform additional studies to further characterize the identified source areas, as well as identify the parties responsible for the releases.

4.0 SITE TOPOGRAPHY, GEOLOGY, AND HYDROGEOLOGY

Topography

Topography in and around the Site is gently sloping with elevations ranging approximately from 900 to 920 feet (estimated from USGS, 2013) above mean sea level (AMSL).

Geology

The Site is located approximately 7.8 miles northwest of the confluence of the Minnesota and Mississippi Rivers, in the vicinity of a buried bedrock valley that formerly contained the Glacial River

Warren. The upper-most bedrock in the area of the site is typically the Platteville formation, at depths of 90 to 150 feet below grade. However, the surficial soils were developed from Des Moines Lobe glacial outwash deposits consisting of sand, loamy sand and gravel; overlain by loess deposits less than four feet thick that fill the bedrock valley and underlie the entire area (Balaban, 1989). Regionally, the bedrock units from top to bottom are the Platteville Formation, Glenwood Formation, Prairie du Chien Group, Jordan Sandstone and the St. Lawrence Formation. The Prairie du Chien Group is the primary drinking water aquifer of the Twin cities Metropolitan area.

Hydrogeology

The hydrogeologic units at the Site include the Quaternary shallow water table aquifer and the Quaternary Aquifer in the glacial outwash. The Quaternary Aquifer is hydrologically connected to the underlying St. Peter Aquifer through a drift filled bedrock valley located near the area. St. Louis Park Wells SLP4 and SLP6 and Edina Wells E2 and E7 are open hole in the Prairie du Chien-Jordan Aquifer. The groundwater flow direction in each of these aquifers is principally to the southeast. The St. Lawrence Formation is a less permeable aquiclude that lies below the Prairie du Chien-Jordan Aquifer.

5.0 DATA QUALITY OBJECTIVES

The objective of the SI is to generate and present analytical data of sufficient quality to:

- Document current groundwater contamination at the St. Louis Park and Edina well fields.
- Document groundwater quality from fifteen area monitoring wells from the nearby existing Federal Superfund site Reilly Tar and Chemical Site (Figure 1).
- Document the contaminant hydrogeology of a nearby potential source or sources for the municipal well contamination.
- Provide data to U.S. EPA for evaluation of the site as a candidate for potential inclusion on the CERCLA National Priority List for the groundwater contaminant migration pathway under the Hazard Ranking System (HRS).

6.0 SAMPLING STRATEGY

The primary objectives of the SI will be to confirm and document the tetrachloroethylene (PCE) release in the St. Louis Park and Edina municipal wells, confirm that existing monitoring wells in the St. Peter, Platteville and Quaternary aquifers are impacted, and to provide details of the St. Louis Park Solvent Plume site history, geology, contaminant hydrogeology and conceptual site model (CSM). The location of the wells proposed to be sampled is shown in Figure 2.

The CSM of the SLPSP presented will include a discussion of the known contaminant pathways both at the SLPSP and potential contaminant pathways to aid in determining whether the properties identified in the SLPSP site are the source for the VC and other chlorinated solvents identified in the St. Louis Park and Edina municipal wells. The SLPSP site investigation is ongoing and both historical and recent sampling results will be provided and discussed.

The MPCA will collect PDCJ Aquifer groundwater samples from the two St. Louis Park and two Edina municipal wells shown on Figures 2A and 2B. Background groundwater samples will also be collected from the PDCJ Aquifer from St. Louis Park Well SLP5, Edina municipal well E15 and from monitoring well W403 located, respectively, approximately two miles northwest, less than one mile west and one mile east of the St. Louis Park-Edina well fields.

St. Peter Aquifer groundwater samples will be collected from monitoring well W133 and Platteville Aquifer samples will be collected from monitoring wells W120, W143, W433, W434, W437 and W438. Background PVGW groundwater samples will be collected from monitoring wells W27, W424 and W426.

Quaternary Aquifer samples will be collected from wells P307, P309 and P310 and background Quaternary groundwater samples will be collected from monitoring wells W423 and W425.

Sample Summary					
Media	Field Samples	Duplicates	Background	Trip Blanks	Total
PDCJ Groundwater	4 PDCJ municipal wells SLP4, SLP6, E2 and E7 + 1 MS/MSD 1 Event	1	3 (PDCJ samples from St. Louis Park and Edina Municipal Wells SLP5 and E15 and monitoring well W403) 1 equipment blank	1	11
PVGW Groundwater	6 PVGW monitoring wells W120, W143, W433, W434, W437 and W438 + 1 MS/MSD 1 equipment blank 1 Event	2	3 (PVGW monitoring wells W27, W424 and W426) 1 equipment blank	1	15
Quaternary and St. Peter Groundwater	3 Quaternary monitoring wells P307, P309, P310 and 1 St. Peter Aquifer monitoring well W133 + 1 MS/MSD 1 equipment blank 1 Event	1	2 (Quaternary monitoring wells W423 and W425)	1	10

Procedures

Groundwater samples will be collected from individual sampling locations in accordance with the MPCA Site Assessment Program Quality Assurance Project Plan (MPCA, 2014). Sampling techniques will vary depending upon well location, ownership, and well type. Standard operating procedures (SOP) for the sampling event will be derived from the MPCA SA QAPP.

Groundwater samples will be analyzed for Trace VOAs using the U.S. EPA Contract Laboratory Program (CLP). Natural water geochemical parameters will be monitored in the field using a flow-cell to verify samples are representative of aquifer conditions. These parameters will include pH, oxidation-reduction potential, specific conductance, dissolved oxygen, and temperature.

7.0 INVESTIGATION-DERIVED WASTE PLAN

It is not anticipated that any waste collected during the SI will require disposal as hazardous waste. Purge water will be disposed of at the St. Louis Park and Edina waste water treatment plants. Investigation-derived waste will consist of tubing, disposable vinyl and/or nitrile gloves, and detergent water. These items will be used for sanitary considerations and to prevent cross-contamination. The disposable materials will be secured and will be disposed of as non-hazardous waste in ordinary waste containers for disposal.

8.0 REFERENCES

AECOM, 2013, VOC Sampling of the Edina and St. Louis Park Wells in FY2013, June 30, 2013, prepared by AECOM for MPCA, 380 pages (AECOM, 2013A).

AECOM, 2013, Passive Soil Vapor Survey Investigation at 6425 Oxford Street and 6518 Walker Street in St. Louis Park, Minnesota, January 31, 2013, prepared by AECOM for MPCA, 202 pages (AECOM, 2013B).

AECOM, 2012, Passive Soil Vapor Survey at the Former Flame Metals Site, Continuation of Investigating Potential Sources of Chlorinated VOCs in St. Louis Park, Minnesota, March 27, 2012, prepared by AECOM for MPCA, 83 pages.

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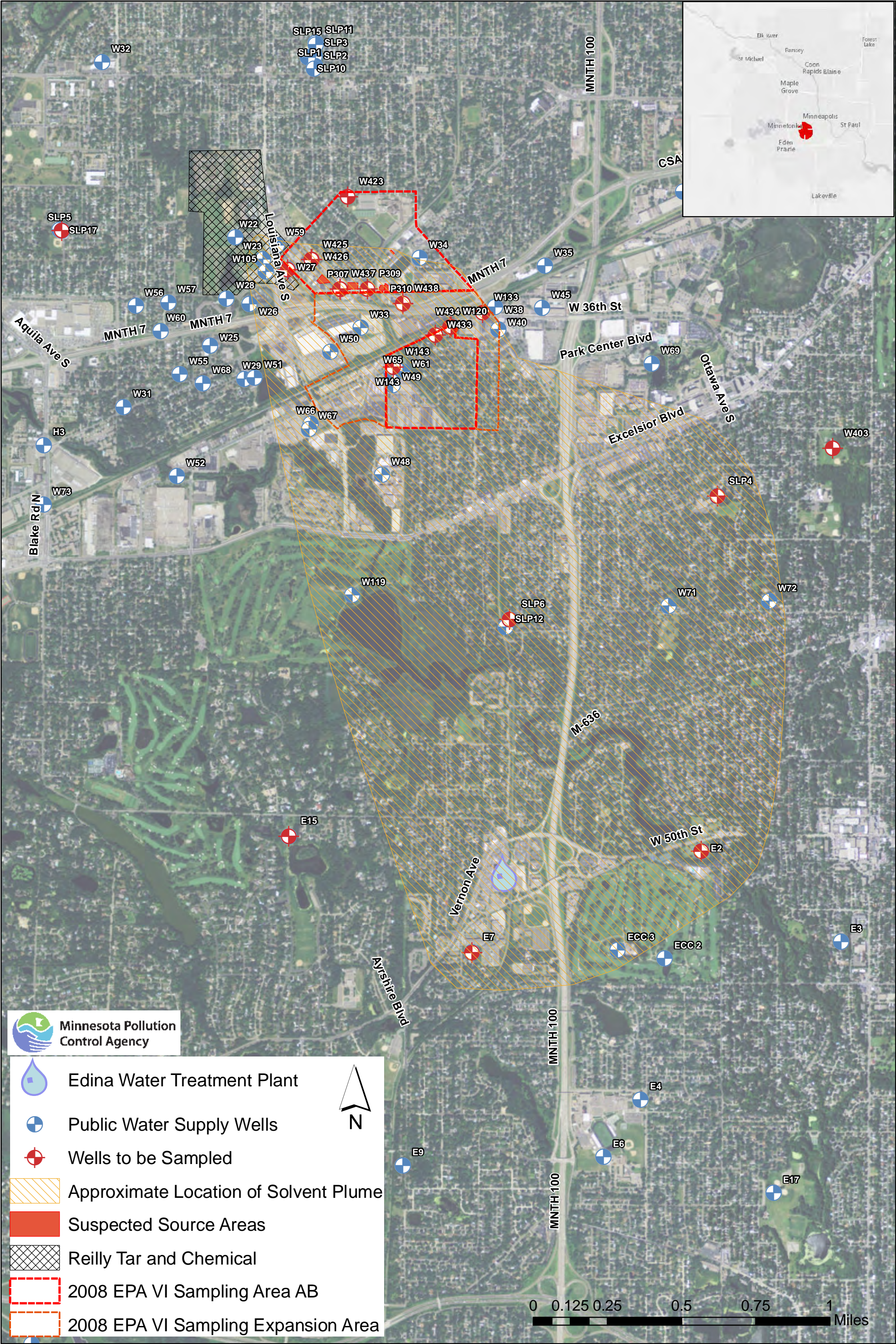
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STS Consultants, 2007, St. Louis Park Soil, Soil Vapor and Groundwater Investigation, September 19, 2007, prepared by STS for MPCA, 134 pages (STS, 2007B).

United States Geological Survey. 2013. Minneapolis South 7.5 Minute Quadrangle. Accessed at:
<http://viewer.nationalmap.gov/viewer/>

FIGURE 1: SITE LOCATION MAP



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FIGURE 2A: WELLS PROPOSED FOR SAMPLING



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FIGURE 2B: WELLS PROPOSED FOR SAMPLING

